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CONTENTS

FRONT COVER ILLUSTRATION

Twohy Brothers' 100-C Bucyrus Shovel, Excavating for The C. M. & P. S. Ry. Terminal at Great Falls, Montana. See Page 169.

Leading Articles

American Mining Methods in Lapland 163
Repairing the Break in The Montreal Conduit with the Aid of a Dragline Excavator 171

Miscellaneous Articles

Twohy Brothers' Contract on The Great Falls Terminal of The Milwaukee 169
Street Grading in Everett, Washington, with Revolving Shovel 172
Transporting a Big Dragline by Barge on The Mississippi River 173
Climbing a 30 Percent Grade with a Revolving Shovel 173
Basement Excavation in New York City 174
Morrow-Kennedy Company's Contract on The Southern Railway Completed 175

Editorial

Construction Outlook 176
The Philosophy of a Boss 176
Steam Shovel Equipment at Panama 177
The Louisiana Levees 177

Field Notes

An Excellent Type of Daily Report Sheet 178
Blasting Overburden in Winter 178
An Easy Method of Determining a Grade 178
How to Extract a Refractory Shoulder Bolt from a Shipper Shaft Bearing 178

Devices You Ought to Know About

A New 4-Ton Dumping Truck 179
A Portable Power Driven Trench Pump 179
Generating Sets for Shovels and Draglines 180

Shots From the Firing Line

Brief Notes From Men in the Field 181

Index to Advertisers, Page 200.
Book Reviews, Page 177.

ADDRESS ALL COMMUNICATIONS TO

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BRADLEE VAN BRUNT, Manager and Editor

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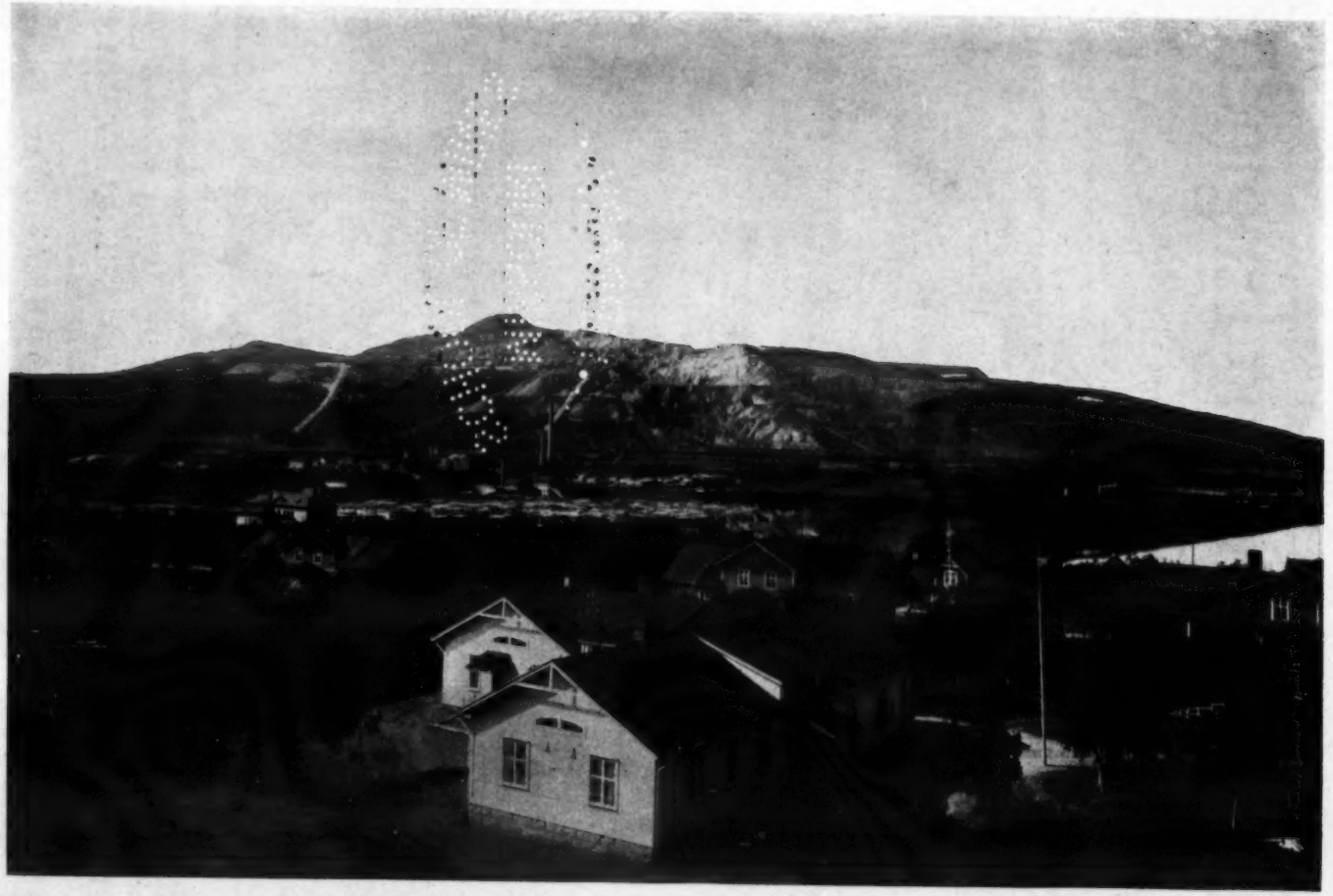


General View of the Village of Kiiruna, Sweden—The Great Iron Mountain, Kiirunavaara, in the Background.

The Excavating Engineer

Vol. 10 FEBRUARY, 1914 No. 5

American Mining Methods in Lapland.

IN Lapland, 100 miles north of the Arctic Circle, extensive shovel operations are being carried on in the famous iron mines of Kiiruna, Sweden. These operations are of peculiar interest from a standpoint of shovel operation, inasmuch as two Bucyrus steam shovels and one Bucyrus electric shovel are being worked under severe conditions, in competition with electric shovels of German manufacture. Although two 70 ton Bucyrus steam shovels were installed in the stock piles at Lulea as early as 1904, the first steam machine, a Bucyrus 95-C was not started in the mines at Kiiruna until the latter part of 1907. Very recently, however, electric machinery has been installed and at present a 100-C Bucyrus electric and two German electric shovels are being operated. The electrification of the mines is in progress, and this power will be used exclusively as soon as the new power plant of the state of Sweden, now under construction at the Porjus falls, is completed. The transmission line is completed and it is expected that the power station will be ready to deliver current early this year.

The Kiiruna region is rightly considered one of the most remarkable iron deposits in the world.

Until interest was aroused in utilizing these gigantic deposits, little was known of the geology of this part of the country. The region was a most desolate one and investigations were rather difficult to carry on, but the proportions of the iron mountain Kiirunavaara were of greater interest than the surrounding territory and the richness of the ore was facinating in the extreme.

The first fairly accurate survey was made in 1875 by a commission appointed by the Geological Survey, and later Mr. K. A. Fredholm collected some interesting data. In 1896 Prof. Helga Backstrom started a thorough investigation of the more essential geological features of the district and in 1897 Dr. Hjalmar Lundbohm made a study of the deposits from the practical point of view for the Swedish Government.

The Ore Docks at Narvik, Norway.

The Luosavaara-Kiirunavaara iron ore mines are located, as stated, in Lapland about 80 miles north of the Polar Circle, 170 miles from Lulea the Baltic Sea port and 90 miles from Narvik the present shipping port for the ore, on the Northern coast of Norway. The distance from Stockholm to Kiiruna is about 1000 miles.

A 95-C Bucyrus Shovel Loading Iron Ore at Lulea, Sweden.

The railway reached Kiiruna in the spring of 1899 at which time the development of the mine was begun on an extensive scale.

The climate is a rather severe one, the winter lasting from the beginning of October to the last of May, the average yearly temperature being 29 degrees F. There are huge falls of snow and the temperature frequently goes to 31 degrees below zero. During the month of December the sun never gets above the horizon but in the summer months the days are long, the month of July being light throughout the 24 hours of the day.

100-C Bucyrus Electric Shovel Digging Ore.

The building of houses at Kiiruna began in 1900 and today a clean, well laid out city, with macadamized streets and good sidewalks, splendid schools and churches and a population of about 10,000 exists. The educational system embraces a manual training school organized and maintained by the mining company and under the direction of Dr. Hjalmar Lundbohm, the Managing Director who may be credited with all that this modernized wilderness now represents. He is the moving spirit in the development of Kiiruna and her mines. Through his enterprise, and no doubt through his own liberal contributions, although this can only be surmised, as he is the kind of man who does much and tells little, has been erected a beautiful church. The architecture of this edifice is difficult to define and may truly be said to be all its own. It is built throughout of wood, substantial in the extreme, and its artistic features are the work of famous Swedish artists and sculptors, all friends of Dr. Lundbohm.

The Luosavaara-Kiirunavaara mines lie on a plateau about 1000 feet above the sea, consisting of vast moorlands and moraines. The iron mountains reach a height of about 800 feet above this plain. The only timber in the district is birch and the mountains rise above the tree limit.

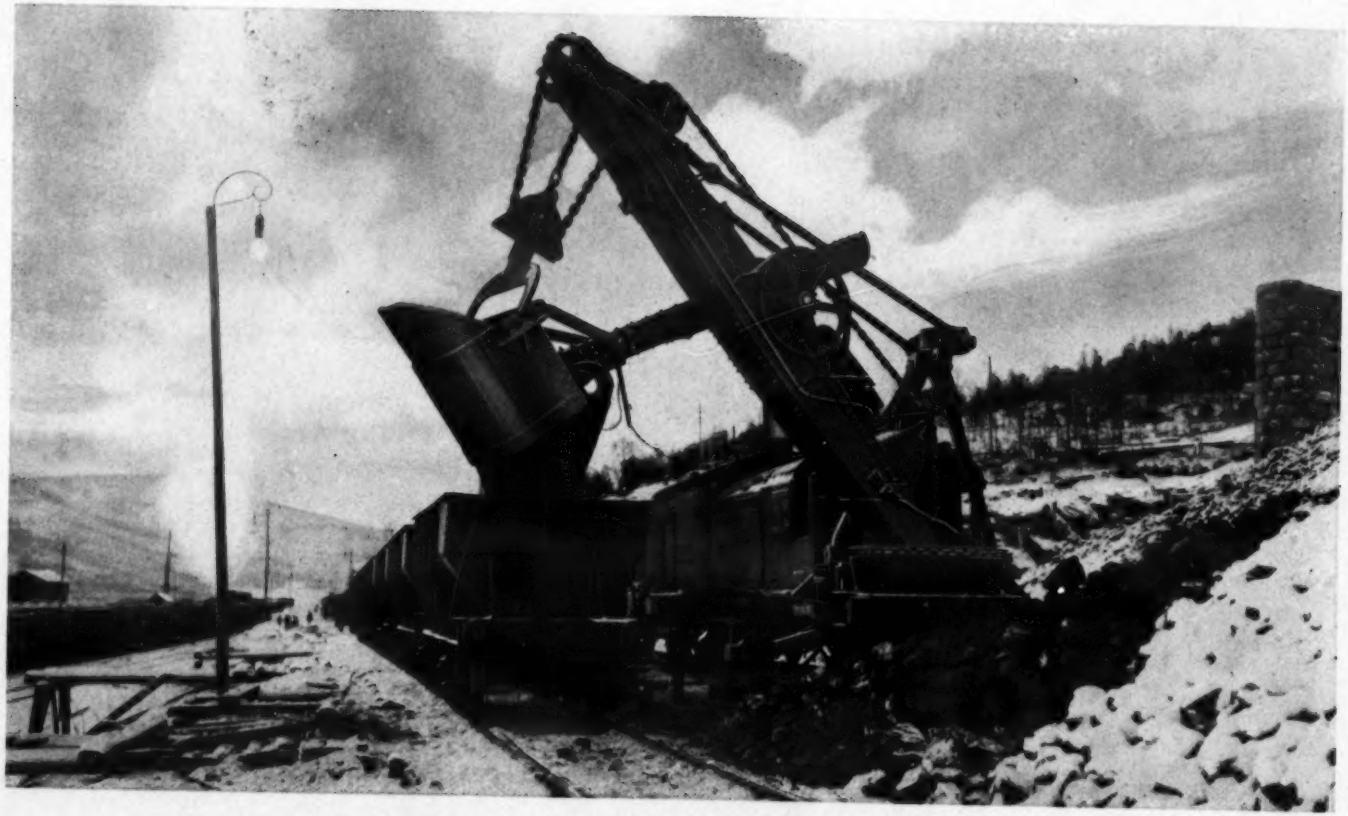
The Kiirunavaara ore deposit commences in Luossajarvi and continues towards the south, as far as is known, with a length of somewhat more than three and an eighth miles. The mountain ridge itself, with a length of about two and three-quarter miles consisting exclusively of iron ore, is divided into eleven more or less strongly marked hills.

Although the iron ore generally is intersected by innumerable joints it has resisted the erosion very much better than the surrounding rocks. In Kiirnavaara the ore dips to the east about 54 degrees. The hanging wall has been eroded more than the foot wall and for this reason the right width of the ore body cannot be obtained by direct measurement. It has, however, been possible to find the dimensions near the surface with the help of cross sections constructed according to the angles of dip, found by diamond drillings.

At the top of the ridge, where the boundries of the ore body are very well known, its horizontal width is an average of about 300 feet and the thickness, at right angles to the hanging and foot walls is approximately 240 feet. These measurements were determined through 56 section lines taken 150 feet apart. The thickest section is at the hill Geologen where the horizontal width is about 600 feet and the thickness about 500 feet. In the lowest parts of the ridge the width ranges from 125 to 160 feet. The greatest depth as yet found is about 1700 feet under the ridge of Kiirunavaara, and the horizontal area calculated from careful surveys is about 440,000 square yards.

One Edge of Vein Showing Iron Ore and Rock.

Luosavaara mountain has not been mined as yet, but on Kiirunavaara at the present time, there are seven levels from which the ore is being mined either by hand labor or by shovels driven either by steam or electric power. Two shifts of men are used, the first beginning work at four in the morning and working until twelve o'clock and the other beginning at one and working until nine in the evening. Blasting is done at 8:20 A. M. and 4:20 P. M.

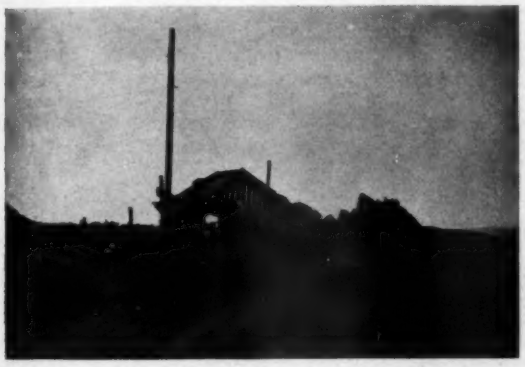


Loading Iron Ore at Narvik, Norway—95-C Bucyrus in Action.

Mining is carried on the year round, notwithstanding the severe climate and the huge quantities of snow with which they have to contend. The permanent level tracks and some portions of the inclines are covered with snow sheds which are effective in keeping the tracks clear in the winter.

The output of the mine in 1912 was approximately 3,000,000 tons and it is hoped that within another year this output will be doubled, large additional equipment already having been ordered with this end in view. There are at the present time 1600 men employed in the mines as most of the face is worked by hand. The mechanical equipment consists of three electric and one steam shovel, all of about 100 ton size with 3½ cubic yard dippers. Two of the former are of German manufacture while the latest addition is a 100-C Bucyrus electric. The steam machine is also of Bucyrus manufacture. These are giving far better satisfaction than the German machines.

The Bucyrus 100-C electric shovel is similar to the standard steam machines of this same size, capacity and general construction. It is equipped, however, with a 225 brake horse power hoisting motor, a swinging motor of 115 B. H. P. and a thrusting motor of 140 B. H. P. It is designed to operate on a 440 volt 3-phase, 25 cycle circuit.



Dumping a two-ton car on the seventh level at Kiiruna. The ore falls into a vertical shaft connection with the fifth level. From the pocket at the lower end of this shaft it is hauled by an electric locomotive to another vertical shaft which takes the ore to the level of the final loading pockets.

This is stepped down from the main line supplying the mine, which is 2000-2200 volts by three single phase transformers of 150 K. V. A. capacity each.

The main features of the electric shovel lie in the fact that the motors are of very heavy and substantial mill type as the service demanded of them is exceptionally difficult, owing to the rapidly changing conditions of shovel operation. Even these motors would not be able to stand this service were it not for the very effective method of control which is used in connection with them. The hoist motor is governed by a full automatic control consisting of master controller, resistance frames, solenoid switches and jamming relays, so arranged that uniform quick accelleration of the hoist is assured and so that resistance is automatically cut in when the motor load becomes too heavy or when the motor is stalled. In this way the maximum current taken by the

The Bucyrus 100-C Electric Shovel in the Foreground, the German Electric Shovel in the Background.

motor will not cause the circuit breakers to open and the operator is able to retain control over the motor at all times. The control of the swing motor is somewhat similar except that it is a full automatic reversible control, so arranged that the operator may throw the controller handle from full speed in one direction to full speed in the other direction without in any way injuring the motor, the motor being checked and started in the other direction by an automatically governed amount of current. The thrust motor is also so protected that it can be stalled without injury and yet not throw the circuit breaker, so that the operator retains control over the motor under all conditions.

Air operated thrust cylinders are used in place of the steam thrust cylinders on a steam shovel and have proven highly satisfactory. Air is supplied to them by means of a separate automatically controlled motor driven air pump with necessary tank and piping.

The shovel weighs 112 tons in working condition. It has already proved itself more efficient, more powerful and more economical to operate than the German machines.

The shovels load the ore into 12 ton side dump cars which are hauled in trains of five cars each by Orenstein & Koppel 12 ton, 90 H. P. switching locomotives to the scales and breaker, which are located side by side. After weighing, the cars pass to the breaker and are automatically dumped and again

automatically righted. This is accomplished by throwing over an angle iron rail, opposite the breaker after the train has passed to the scales. This rail engages a trunion on the body of the car and tilts it sufficiently to cause it to dump. As the empty train is pushed back to the shovel it passes a similar stationary rail on the opposite side, which again rights the cars.

The breaker which, is of the jaw type, was supplied by the Power & Mining Machinery Co. of Milwaukee, Wis. The breaker has a capacity of 500 tons per hour but as it has only recently been put into commission and the track arrangement has not been changed to permit of quick switching, it has been impossible to get sufficient ore to it to test its capacity. It is an enormous affair and probably weighs close to 150 tons. The tracks are now being rearranged and it will soon be possible to have a constant flow of ore to the breaker at which time a test will be made to ascertain just how much ore will pass in a given period of time.

The hand mined ore is dumped directly into vertical shafts, similar to the one beneath the crusher, and all of these shafts lead to pockets on the lower levels where the ore is loaded through chutes into three or five ton cars. These are run in trains of from 10 to 15 cars and are hauled by electric locomotives to other vertical shafts connecting with the steam track level where the 45 ton cars are loaded and hauled direct to Narvik, the shipping point on the north coast of Norway. This station is the most northern railroad station in the world, being in 69.3 degrees north latitude, and on a line with the northernmost limits of Alaska.

There are now used in the mine 700 dump cars of two, three, five, and twelve ton capacity; fifteen electric locomotives of 125 and 250 H. P. capacity and eight 12 ton steam switching locomotives, all of the latter having been supplied by Orenstein & Koppel. Nine of the electric machines were built by the Allegemeine Electricitets Gesellschaft of Berlin, Germany, five by Nya Forenada Elektriska Aktiebolag of Ludvika, Sweden and one by the Deutsche Machinen Fabrik of Magdeburg, Germany.

The power station is a modern structure of brick and steel construction, and the machinery of the most recent design.

The company operates an electric passenger railway which runs from the centre of Kiiruna to the lower station of the passenger incline, this service is for the purpose of carrying the men to and from the mine. The incline is about 2000 feet long and rises at an angle of about 30 degrees. The upper station is at the fifth level. There is still another electrical incline used for lowering ore from the fifth level to the hoppers located over the steam railroad tracks. This incline is operated by two 195 K. W., 600 volt, 125 R. P. M. machines operate either as motors or generators according to the position of the load on the incline. The moment the loaded cars leave the level and start to descend the machines become generators. Thus the actual expenditure for power on this incline is very materially reduced. The time that the machines are working as motors is perhaps not more than ten to fifteen seconds while the generating period lasts for several minutes.

Besides the power plant there is a complete saw mill equipment for furnishing all of the lumber required by the mine. A large gang saw, planer, cross cut, edging machine and rabbiter are installed and are all electrically driven.

A machine shop fully equipped for every class of repair work that it is necessary to perform, as well as a small foundry and forge shop are also available and are splendidly housed in brick structures. The tools are all modern and embrace engine lathes, shapers, radial and speed drills, planer, grinding machines and a steam hammer of good size. This repair shop is also electrically driven by alternating current motors. A drill sharpening plant is located on the fifth level of the mine and equipped with an automatic machine which will sharpen an air drill 1 inch in diameter with six cutting edges in 20 seconds. A 2¾ inch drill was sharpened in 1 minute and 45 seconds. This machine, which is the product of the Atlas Mekaniska Werkstaad of Malmborg, Sweden, consists of a small air operated hammer by which the end of the drill is first drawn into shape and a second hammer operating against a die, against which the end of the drill is forced, the whole operation of sharpening being accomplished in one heat. The work is done on the piece rate basis, two men working together, one heating while the other uses the machine and each taking a turn about at the latter. The drills are laid on a carrier, the top or connecting end of the drill abutting against a block held fast to a sprocket chain which, through the action of a treadle forces the drill against the sharpening die.

A well equipped manual training school, is located in the town of Kiiruna, and owned and maintained by the mining company.

The output of ore for the year 1912 from the Kiiruna Mines was about three million tons, which was shipped by train to Lulea, Sweden and Narvik, Norway. The port of Lulea although considerably south of the mines is open only five months of the year. A large amount of ore is shipped here and stored in stock piles. Here it is dug when required by two Bucyrus 70 ton shovels, three 95-C Bucyrus shovels and one Vulcan shovel, all steam driven. The harbor of Narvik on the other hand, although 90 miles northeast of Kiiruna and more than 150 miles north of the Arctic Circle, is open the year round, owing to the action of the Gulf Stream. Consequently, a greater part of the ore is shipped

from here, although it is necessary to climb the Continental Divide. Two Bucyrus 95-C steam shovels are used here in the stock pile. The ore is loaded into steamers for Germany, England, United States and other countries. The bulk of the ore goes to Germany and England and about 300,000 tons annually to the United States.

The terminal facilities at Narvik are very complete, embracing twenty-two pockets on the quay with a total capacity of more than 5000 tons. From these pockets the ore is loaded through chutes into the vessels which are moored at the quay, the water level being about 50 feet below the bottom of the pockets and allowing ample pitch for an easy run of the ore.

The loaded trains arriving from Kiiruna pass the scale house and, during the operation of weighing, are sampled. About 600 pounds of ore is taken from each car and transported on small dump cars to the sampling house located nearby. The process of sampling is quite the same as used in America and the samples here taken are checked against those made at the mine at Kiiruna, the results being so accurate that, up to the present time no controversies have arisen between the company and its patrons. Something over 300 forty-five ton cars of ore arrive every day and when ships are not available for immediate shipment it is put into the storage piles. When a demand is made upon this reserve stock it is loaded into 45 ton cars by a Bucyrus 95-C steam shovel, a 45 ton car being loaded in three minutes.

The Luossavaara-Kiirunavaara Co., owns a fleet of twelve ore carrying vessels having a total capacity of 100,000 tons, the later models being built on the Johnson-Welin principle. These last named steamers were built by the R. & W. Hawthorne, Leslie & Co., New Castle-on-Tyne, England.

While the mine shipments in 1912 amounted to more than 3,000,000 tons this figure will be exceeded in 1913 and, when the new equipment, which has now been ordered, is put into service the shipping capacity is expected to exceed 6,000,000 tons annually.

Tour of Inspection—From left to right, Yard Foreman, Dr. Hj. Lindbohm, T. Lindbohm, Mr. King of the Bucyrus Co. and Mr. Simon of the Cutler-Hammer Co.

Besides the ore loading docks the company has extensive coal handling equipment at Narvik as it is at this port that all of its fuel is received from English and German shippers. It also provides coaling facilities for all of its own fleet as well as other vessels calling for ore.

The enterprise is splendidly managed, the immediate direction being in the hands of Dr. Hj. Lundbohm very ably assisted by Messrs. Thure Lindbohm, and E. and Axel Dahleen, M. E., E. E.

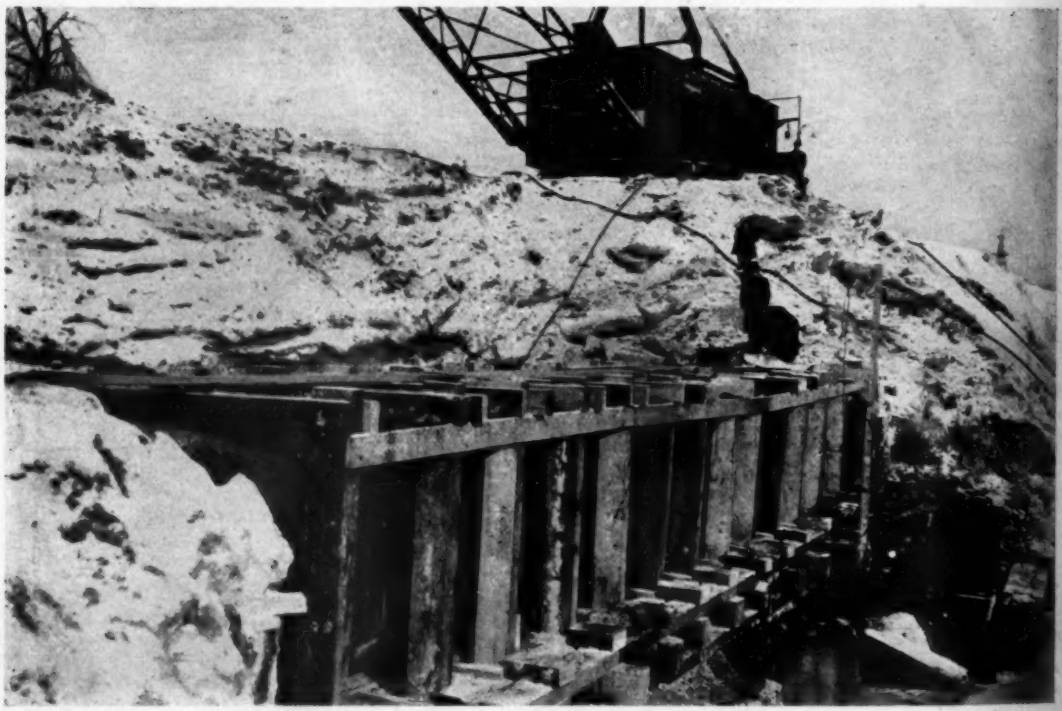
Twohy Brothers' Contract on the Great Falls Terminal of the Milwaukee

On our front cover we publish a photograph of Twohy Brothers Company's 100-C Bucyrus shovel in operation. The machine is shown digging a thorough cut in connection with construction operations for the Chicago, Milwaukee & Puget Sounds' Terminal in Great Falls, Montana. The contract, which is now completed, comprised the excavation of 300,000 cubic yards of rock and earth. The rock was blasted with 40% Dupont dynamite. The material was loaded into standard gauge, Kilbourne & Jacobs 16 yard, air dump cars, the average haul being three miles.

The thorough cut in which the shovel is shown is 8,000 feet long with an average depth of 15 feet.

The shovel is at present working in a borrow pit outside of Spokane, Washington.

Getting Her Nose into it—Bucket of Class 24 Bucyrus Dragline Cleaning up the Wreckage.



The Thimble in Place—Class 24 Bucyrus Dragline in Background.

REPAIRING THE BREAK IN THE MONTREAL CONDUIT.

Repairing the Break in the Montreal Conduit with the Aid of a Dragline Excavator

ON Christmas day at 5:30 in the afternoon a break occured in the five mile, 8 foot reinforced concrete water conduit of the city of Montreal, which resulted in depriving that city of water for eight days. It is true that a scanty domestic supply was provided by feeding the city mains from the supply lines of a private company, The Montreal Water & Power Co., and by the distribution of water in sleighs and carts, but except for a few small districts and several suburbs, Montreal was destitute. Hospitals, hotels, manufacturing plants and churches were affected and the general discomfort was aggravated by several serious fires.

As reported by the Engineering News soon after the accident occured, the conduit, which was built five years ago, is 27,300 feet long and lies along the north bank of the open "City Aqueduct" canal, now dry, which led from the St. Lawrence River above Lachine Rapids to the pumping station in the western part of Montreal. The conduit was planned to be the permanent supply line, and to permit emptying the canal in order to allow it to be enlarged for power purposes.

The enlargement has been in progress for the last few years. The contract is now being undertaken by the Cook Construction Co. Ltd. This company has three Bucyrus Class 24 dragline excavators on the work. One, which had recently arrived upon the scene, was just being erected and the other two were laid up for the winter.

One of these machines happened to be stationed on the edge of the canal about 1000 feet from the spot where the break occured. It had recently been used for widening and deepening the canal and had brought this section practically to full width and depth, five feet below the conduit invert. About halfway from the intake to the pumping station, the canal enlargement is in clay, and approaches the conduit closely at a point where the latter makes a slight bend, concave to the canal.

Water department officials state that nearly a week before the break, the conduit was laid bare and a small flow of water came from a "slight fissure" in the exposed lower corner of the conduit. Probably this flow contributed to exposing the pipe. Attempts were made to close the leak by calking, and by dumping stone behind sheeting or cribbing to prevent wash. Canal excavation was stopped. About 5 p. m. December 25th, the lower 2 feet of the southerly conduit wall, with a piece of the bottom, broke out on a length of 60 feet, and emptied the conduit. The headgates were then shut. The dragline was immediately steamed up and moved down the canal bank 1000 feet to the scene of action. Delay was caused by the freezing of the pumps, which rendered it necessary to fill the tank with pails, carrying the water from the canal. At 1 P. M. December 26th all was in readiness to dig the material from around the conduit. It was first attempted to break the concrete by mud-capping with dynamite, but with the assurance of Mr. Flynn of the Bucyrus Company, an expert dragline operator who happened to be on the job erecting the new machine, and F. J. Herlihy of the Cook Construction Co., the dragline was brought into play and better results were obtained by using the bucket as a maul. The bucket was filled with earth and swung against the concrete, breaking it successfully. The machine then tore away the concrete. The invert was 8" thick and the sides 12" on horizontal center. Our photographs show the dragline in action.

The Montreal Daily Telegraph for December 29th makes the following statement in regard to the assistance the machine gave:

"It has been a lucky thing indeed for Montreal that the great class 24 dragline belonging to the Bucyrus Steam Shovel Company, was so near the spot when the break occured.

This big machine has accomplished in a few days what it would have taken a gang of one hundred or more men three weeks to do. The dragline has moved about five thousand square yards of soil, exposing the broken tube for about thirty-five feet."

The excavation to clear the conduit and the cutting out of the broken portion, occupied two days.

The break has been repaired by inserting a thimble of steel pipe about 125 feet long. The ends were sealed into the conduit with cement mortar. The dragline was used as a crane to lower this pipe into place.

Northwestern Pushing Towards the Pacific

The Northwestern railroad has just finished purchasing a right of way from Lander, Wyoming, its present western terminus, to Idaho Falls, Idaho, 250 miles, and construction work is said to be scheduled to begin before July 1.

For years Northwestern engineers have searched the Teton mountains for an easy grade without finding one. It has been considered among railroads that the Northwestern was bottled up in central Wyoming.

Last summer engineers succeeded in finding a way across the Tetons and right of way agents have just obtained the land.

The 18-B Bucyrus Shovel Grading Walnut Street, Everett, Washington.

Street Grading in Everett, Washington, with Revolving Shovel

F. Kerr Ffolliott has recently completed a street grading contract in Everett, Washington, on which he used, to very good effect, a revolving shovel. The contract was for the grading of Walnut Street, to a width of 80 feet, a yardage of about 20,000 cubic yards. The cutting which in no place ran over 4 feet in depth was done with an 18-B Bucyrus shovel, equipped with a 7/8 yard dipper. The contract also called for the laying of concrete sidewalks and gutters. The material handled was sticky clay with a hardpan bottom.

As above stated the street was made eighty feet in width. This was done by the Bucyrus shovel in two cuts, with hardly any trimming necessary. Mr. Ffolliott writes us in regard to the work of the shovel as follows:

"The grade was followed very closely by the shovel and the street was very uniform behind it. The shovel did good work in cuts as shallow as 18 inches. It dug some hardpan, which was extremely hard, without any trouble. On account of the shallow digging we used three pit men to facilitate moving. There were two men on the shovel. We loaded in wagons all the time. There were a great many large stumps on this job. The shovel handled them with great ease, putting them to one side, where they were afterwards burned."

According to Mr. Ffolliott the shovel made 600 yards in eight hours under the above described conditions, holding this average despite the fact that the cutting was extremely shallow. The material was hauled a distance of about 1000 feet by 8 to 9 teams, with two yard wagons. It was used for filling low lots. Mr. Anderson the foreman states that he made the shovel pay very profitably in digging where the cut was a foot or less in depth, and the material was a stiff hardpan.

Water was hauled to the shovel in a tank wagon and the shovel tank was filled in the morning and at noon. Coaling was done at the same time. Part of the time the water was obtained from outside faucets on the neighboring houses. In these cases water was taken while the shovel was running.

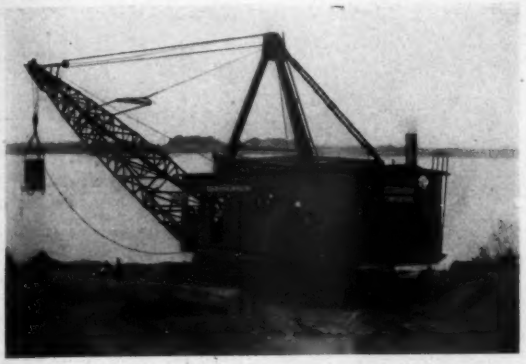
The shovel can dump 22 feet, 10 inches from its center, can lift 11 ft. measuring from the open dipper-door, and has a digging reach at an 8 foot elevation, of 25 feet, 9 inches. It weighs 25 tons in working order. Chas. A. Anderson was foreman and Joe Le Rose, engineer of the shovel.

The 18-B Bucyrus in Action.

Transporting A Big Dragline Excavator by Barge on the Mississippi River

The well known levee contractors Hearin & Ryan of Baton Rouge, Louisiana, have recently installed a Class 24 Bucyrus dragline on their levee contract south of Baton Rouge. As the place where the work was started was some distance from any railroad, it was found necessary to transport the machine a distance of 20 miles by barge. The dragline was erected beside the tracks of the Yazoo and Mississippi Valley R.R. close to the grounds of the Louisiana State University, a distance of about 350 feet from the river.

The erection and painting was completed in 19 days time and a house built in a period of five days extra, which was considered very good under the conditions. The total cost of erection was $600.00.



Class 24 Bucyrus Digging an Incline to the River.

At this point the top of the bank is about 60 feet above the river. The dragline lowered itself down this bank, which in many places attained a grade of over 15 per cent. It was necessary, of course, to dig an incline. This the machine did for itself.

The method of procedure was simple. The rollers were chocked while a firm hold was obtained with the bucket back of the machine. The chocks were then removed and it was lowered backwards to the river's edge. A surprising point presented itself in the fact that it was possible at all times for the dragline to pull itself up hill again with no difficulty whatsoever.

The barge which was obtained from The Southern Pacific Railroad was of the transfer type, used for ferrying trains. It was 240 feet long by 47 feet wide and, as is the practice with transfer barges, had a large bridge amidships. It was found to be too long and too unwieldy for this purpose. The machine, in fact, because of the bridge, had to be placed at one end instead of in the middle. Because of it's length it was found to be impossible to pull it up to the shore endways, which of course was the logical procedure, as it could not be held against the swift current. Consequently the dragline dug out a small slip and the barge was grounded with the help of a tug, corner first, and pulled 14 feet on ground. Dirt was then cast in to fill up to the end, big logs thrown in and cribbing built. A runway was then constructed of 8" x 16" timbers, 28 feet long.

The only difficulty encountered was with the tide variation, which made it difficult to keep the barge effectively grounded. The journey down the river and the unloading was accomplished without accident.

Chas. Flynn of the Bucyrus Company superintended the erection and the move. It is understood that good progress is being made on the contract. Don B. Hearin, the well known levee man, is in personal charge of the work.

Climbing a 30 Percent Grade with a Revolving Shovel

That tractive power in a steam shovel is at times an exceedingly valuable asset to a contractor was demonstrated in a striking manner recently by the Donora Construction Company of Donora, Penn.

The shovel in question was an 18-B Bucyrus, equipped with a 7/8 yard dipper. The work on which it was to be used was the construction of a county road in the vicinity of Donora. In order to reach this work two courses were open. To move the machine around the hill on a maximum grade of 10 per cent, or to climb the hill at a grade of about 30 per cent. The former route was roundabout and would have consumed more than three days, consequently it was decided to attempt the latter route. The grade was 36 feet in 120 feet. As shown in our photograph a cable was made fast to the shovel and

18-B Climbing a 30% Grade Under Its Own Power.

by means of a block and fall was led to the top of the hill and back to a traction engine placed at the foot of the hill. This was intended as an emergency brake or as an auxiliary in case the shovel could not propel itself up under its own power. When it got under way it was found that there was from two to three feet of slack in the line at all times. The shovel not only had sufficient power but was faster than the hoisting engine. After it got to the top it was used to haul up a 14 ton dinkey with its complement of dump cars. This was accomplished without any trouble whatsoever. By this course of action from 2½ to 3 days digging time was saved over any other course which could have been taken.

F. J. Patterson is general manager. The work was under the supervision of Bucyrus Company's engineer, Robert Ballinger.

Basement Excavation in New York City.

The digging of the basement for Lord & Taylor's new building on Fifth Avenue in New York is a good example of the adaptability of the small revolving shovel for this class of work in the heart of a big city. The contractors, Thomas Crimmins Contracting Company, used a 14-B Bucyrus shovel, equipped with a ⅝ yard dipper. The excavation is about 25 feet deep, extending 260 feet on 38th St. and practically covering the block between 38th St. and 39th St. on 5th Avenue.

The depth of the pit and the cramped quarters necessitated a runway which was quite steep, consequently it was found necessary to use a single drum engine with a cable to assist the teams in hauling the wagons to the street level.

The material handled, known locally as "Murray

Thomas Crimmins' 14-B Bucyrus, Digging Basement for Lord & Taylor's New Building on Fifth Avenue, New York.

Hill Hardpan" was a hardpan with a soft rock bottom in addition there was a considerable amount of old foundations to be ripped up and dug. This the shovel did without the aid of powder. The output of the machine averaged 100 three yard, sideboard, back dump wagons per day of nine hours.

Most excavated material on Manhattan Island is dumped into scows and hauled to sea. Contractors pay a given sum per wagonload for this service. The result is that they require their shovel men to load wagons to extreme capacity. It is not uncommon to average 3½ yards on 3 yard wagons.

The shovel, however, was considerably delayed by a number of causes. In the first place if no wagon was ready to be lowered at the proper time, the cable had to be taken down the run-way by hand. Again, some time was lost by the necessity of running the cable in and out of the snatch block located at the corner of the run-way.

Some of the material was hauled to 42nd Street and the East River and dumped into scows. The rest was taken to a dump on the west side, by the river.

The shovel was operated by an engineer, Frank Armitage, and a fireman. Two men were used in the pit.

The shovel burned about 40 bushels of coke in a day and consumed approximately 2½ tanks of water, which was piped to the shovel.

The Morrow-Kennedy Company's Contract on The Southern Railway Completed

The Morrow-Kennedy Company of Atlanta have just completed a contract on the Southern R. R. about 5 miles out of Atlanta, Ga. The work which consisted of grade reduction consisted in the excavation of 65,000 yards of material, practically all hard granite rock.

Two shovels were used, a 40-R Bucyrus with a 1½ yard dipper and a 60-C Bucyrus with a 2½ yard dipper.

The 60-C finished up its portion of the work the latter part of November. The machine averaged 30,000 cubic yards a month, working 10 hour days in material which ran 40% solid rock. In the month of September it moved 38,000 yards.

The 40-R has been averaging 200 four yard cars per day of 10 hours in the same material, which as the photograph shows is hard granite rock. The machine loads two 6-car trains of Oliver 4-yard cars, hauled by 12-ton Vulcan dinkeys. The material was used for making a fill a distance of 800 feet from the work.

The rock was sufficiently hard to require blasting before it was handled by the shovel. The holes were drilled 10 feet apart and 50% Dupont powder was used.

Morrow-Kennedy's 40-R Bucyrus in a Rock Cut on the Southern Railway.

Besides the regular crew, four pit men were employed. The machine burned about five tons of coal and consumed four tanks of water a day.

We are indebted to Wm. P. Lang the operator of the 40-R for the foregoing information.

Boat Under Its Own Steam Goes Through Panama Canal

A press dispatch from Panama reports that the first vessel to go through the Panama canal under its own steam made the trip on the morning of Jan. 7th. It was the crane boat Alexander Lavalley, which was brought from the Atlantic entrance to Culebra cut early in December and worked at Culebra until this date.

It was taken through the Pedro Miguel and Miraflores locks to the Pacific entrance this morning, thus making the first transisthmian voyage.

The first boat of any kind to make the transisthmian trip, was a mud scow of the Panama railroad which was brought from the Pacific entrance to Culebra cut in November and sent to the Atlantic entrance on Dec. 23.

Like Father used to Make.

Said a young and tactless husband
To his inexperienced wife,
"If you would give up leading
Such a fashionable life,
And devote more time to cooking—
How to mix and how to bake—
Then perhaps you might make pastry,
Such as Mother used to make."

And the wife, resenting, answered
(For the worm will turn you know),
"If you would give up smokers
And a few clubs or so,
And devote more time to business—
To lessening railroad rates—
Then perhaps, you might make money
Such as Father used to make."

The Excavating Engineer

[FORMERLY STEAM SHOVEL NEWS]

A Monthly Publication Devoted to Excavating *and* Allied Subjects

Subscriptions, payable in advance, $1.00 a year for 12 numbers, 50 cents for six months.

To foreign countries, including postage, $1.00 or its equivalent, 4 shillings; 4 marks; or 5 francs.

Notice to discontinue should be written to the Milwaukee Office in every instance.

Advertising copy should reach Milwaukee Office by 10th of month before date of issue.

Address all communications to the company.

THE EXCAVATING ENGINEER PUBLISHING CO.

Bradley Van Brunt, Manager *and* Editor

367 National Avenue Milwaukee, Wis., U. S. A.

Construction Outlook

The last month has seen a marked up-turn in the construction outlook. The currency reform act is a law, and financiers hitherto unfriendly to the Administration are openly commending the measure and predicting improved conditions. Money is distinctly easier and the outlook for heavy financing much brighter. The unanimity of the national banks in subscribing to the federal reserve system has led to increased confidence. There is a growing assurance that the trust question will be handled at Washington in a fair and friendly way. There is no doubt of it, things are on the up-turn and business men are getting over the bad habit of seeing ghosts.

But still no action upon the question of the increase in freight rates. As the Wall Street Journal puts it:

"Our prosperity depends greatly upon the prosperity of the railroads, for the railroads are the largest consumers. Some good judges believe that the future hangs largely on whether the railroads are allowed an increase in freight rates. This granted, money would be easily obtainable, and the roads would begin to expand."

It almost seems, however, that the Interstate Commerce Commission are in blissful indifference to the anxiety of business men the country over, when one reads through the impressive list of questions which has been drawn up with such ingenuity to present to the railroads, many of which questions seem to have little bearing upon the expediency of granting the railroads' petition. As has been expected little or nothing has been done in railroad construction. Everything is held up pending developments. There is considerable improvement in municipal lines and a few moderate sized drainage jobs have been advertised, manufacturers are busier, the railroads are beginning to buy steel and many mills which have been closed down are opening up.

The Philosophy of a Boss

Several times before we have published contributions from the pen of Mr. Griff Hughes, chief shovel man of the Philadelphia & Reading Coal and Iron Co., Girardville, Pa. Some of these contributions have been useful hints and valuable observations such as emanate from the brain of a practical shovel man. Once or twice, however, Mr. Hughes has given us bits of real philosophy, not the philosophy of the dreamer but of the man who does things. We print below another sample. We publish it just as we received it for we feel that any other method of editing will tend to detract from its sterling good sense and splendid spirit.

"1st. You must feel deeply that your cause is all important.

2nd. You must yourself be devoted to the cause you love.

3rd. You must be prepared to convince and persuade.

4th. You must know human nature, its tendency to doubt and delay to find excuses, and to continue in old lines of life.

To win men you must have your whole heart in the work. Men are not easily caught and those best worth catching are frequently the most chary. Be a wooer and not a driver. Drop out the thunder, temper severity with brotherly kindness.

If you have any authority, don't waste it, but do down to the level of the men who profess nothing and show them you are there to lift them up for their own good. Do not be too lenient, it is dangerous.

Men are to be won to their work just as they are won to other things. Treat them wisely and be considerate. Be kind and sensible, cultivate your sympathy and show them you mean it.

Study methods. If one plan does not work, try another. Don't give up in despair. Never forget that the cause you are pleading means satisfaction in the end, though it may mean many ups and downs."

Steam Shovel Equipment at Panama

According to the latest advices from the Isthmus, twenty-two steam shovels are at present in commission, seventeen Bucyrus and five Marion. In the Fourth Division, which comprises the Culebra district, there are eight in operation, all of which are Bucyrus machines.

The Louisiana Levees.

Over 10,3000,000 cubic yards of levee work have been completed in Louisiana during the past year, with the possibility of about 4,000,000 cubic yards more being added.

Due to the fact that the levees withstood the water of 1913, the levee systems were in a comparatively good condition when the added work was started after the water had receded. In other years, however, the levees have been to a great extent swept away by the floods, and consequently the majority of the work that ensued was in repairing the destruction caused by the high water, instead of adding to the resisting power of the bulwarks. Only one really bad break was registered in Louisiana. This occured at Lake St. John, north of Vidalia, on the Mississippi River. Another bad break occured in the embankments along the Atchafalaya river, but the greater portion of the country inundated was timber lands, and sparsely populated.

This left almost a complete system on which to work, and the majority of the work that has been done since the high waters has been the instituting of new levees behind old ones, which were becoming dangerous, and also the enlarging of smaller levees to place them out of the danger zone. In this manner the levee system has been brought up to that point where it is now more formidable than before.

During the year there has been put in place in the levees of the state by the several levee districts of the state, in round numbers, 6,800,000 cubic yards of earth, at a cost of $1,260,000.

The work done by the state during the same period amounted, in round figures, to 1,500,00 cubic yards, at a cost of $326,000.

Over 1,000,000 cubic yards of earth work has been placed into position by the United States engineers along the Mississippi River in Louisiana and Mississippi, the majority, however, being done in Louisiana owing to the fact that the Mississippi bank is higher and in less need of levees than that of Louisiana. This work has been done mostly along the river from St. Joseph to Baton Rouge.

With 1,000,000 cubic yards completed with the outstanding contracts and those which are contemplated, it is expected that the engineers will exceed 3,500,000 cubic yards of work by the first of the year. This record will eclipse that of former years by several thousand cubic yards.

The engineers of the government are also contemplating the survey of several probable places where spillways would be effective. This work will be done by the secretary's office in St. Louis. These surveys will be made both above and below New Orleans, with the ultimate hope of alleviating the awful strain of the high waters in New Orleans and vicinity.

These surveys will be made as soon as possible and then the findings reported back to the Mississippi River Commission, before whom a strong fight for spillways has been made. Those who made the argument returned to New Orleans from St. Louis following the fight with a great hope that the work will be carried out.

One of the chief factors that developed during the high water fight of 1912 was the fact that with the proper precautions a break in levees could almost always be averted. The engineers have declared themselves almost unanimously in favor of levees. and believing that if during high water a strong guard is maintained along the line, and emergency supplies stationed within close proximity of each other, all breaks could be stopped in incipiency. This fact was proven at Remy and Poydras, where the levee caved off, but the water was prevented from running over it by immediate and effectual work.

The government work in southern Louisiana is under the supervision of the Mississippi River Commission, and the local officers are in charge of Captain C. O. Sherrill.

The state work is under the supervision of the State Board of Engineers. Major Frank M. Kerr, chief engineer, assisted by Joseph Monget, Gervais Lombard and E. C. Robertson. James Laws is secretary of the board.

REVIEW OF BOOKS and CATALOGS

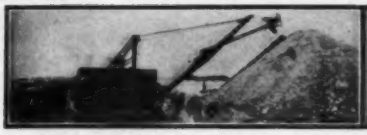
We shall be glad to review in this column such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the prices named.

THE ECONOMY OF BULK CEMENT. 6" x 9" 20 pages and cover. A beautifully printed and profusely illustrated pamphlet dealing in some detail with the various advantages gained by the use of bulk cement, together with the experiences of bulk cement users.

Universal Portland Cement Company,
Chicago, Ill.

TESTS OF PERMISSIBLE EXPLOSIVES. By Clarence Hall and Spencer P. Howell. Bulletin No. 66 Bureau of Mines, 6" x 9", 314 pages. A detailed report of the results of tests made by the Bureau of Mines at the Pittsburgh Station with a view of lessening accidents.

Bureau of Mines,
Department of the Interior,
Washington, D. C.



FIELD NOTES

DISCUSSION IS INVITED FROM MEN IN THE FIELD ON SUBJECTS HERE PRESENTED

An Excellent Type of Daily Report Sheet.

We publish herewith a fac-simile of what we consider the best form of a daily report sheet that we have ever seen. This is being used by the Siems-Carey Company upon their big contract on the Grand Trunk Pacific. This report is made up daily for each camp and sent in to their field headquarters Tete Jaune, Mile 53 B. C. The form is well worth adopting as standard.

Siems-Carey Company, Ltd. **DAILY WORK REPORT**

By..... Camp No..... Date.....

PARTIALLY PAID OR WORK	No.	Total Hours	Rate	Amount
General Superintendent				
Superintendent				
Foremen				
Time Keepers				
S.S. Engineers				
S.S. Crossmen				
S.S. Firemen				
S.S. Watchmen				
Loco. Engineers				
Loco. Firemen				
Loco. Watchmen				
Conductors				
Brakemen				
Passengers				
Total				

DAY MEN ON WORK	No.	Total Hours	Rate	Amount
Dump Foremen				
Dump Men				
Steam Shovel Firemen				
Carpenters				
Trestle Foremen				
Trestle Laborers				
Car Repairs				
Powder Foreman				
Powder Men				
Drill Runners—Steam				
Drill Runners' Helpers—N'w'k				
Drill Runners—Hand				
Drill Runners' H'pers—Hand				
Blacksmiths				
Blacksmiths' Helpers				
Spreader Operators				
Spreader Men				
Total				

DAY LABOR	No.	Total Hours	Rate	Amount
Cook				
Flunkeys				
Teams				
Total				

MISCELLANEOUS	No.	Rate	Amount
Steam Shovel			
Locomotives, Large			
Locomotives, Small			
Dump Cars, 10 yd.			
Dump Cars, 12 yd.			
Boiler, Pump and Line			
Steel	Tons		
Coal Used, Shovel			
Coal Used, Locomotive			
Oil and Waste			
Repairs			
Small Tools			
General Office Expense			
General Superintendent			

	To-day's Work	To Date
Fixed Charges		
Day Pay		
Work		
Camp		
Total		

No. Cars Dumped..... Total to Date.....
Avg. yds. per Car..... Avg. to Date.....
Cost per yd. To-Day..... Cost per yd. to Date.....
Weather.....
Kind of Material.....
Time Delayed.....
Reason.....
General Report of Day's Work.....

Correct.....
Supt. Timekeeper

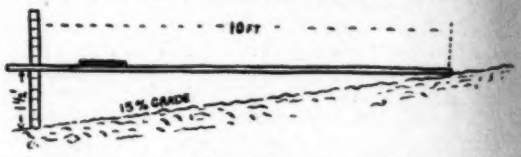
Blasting Overburden in Winter.

It is considered good practice on the Mesabi to conduct stripping operations through the winter, when possible, for the sake of holding together the mine force. Winter stripping, however, is more difficult and expensive, largely from the necessity of handling frozen ground. To minimize this difficulty, it is often advisable to keep the blasting as close behind the shovel as is safe. The reason for this lies in the fact that the blasted ground does not freeze so readily as that left untouched. Suppose the shovel was to make a cut, leaving a fresh face of material behind it exposed to the weather. This, unblasted, will freeze solid before the shovel returns for the next cut and will have to be treated practically as rock. If blasted at once after being exposed, it will remain practically unfrozen until the shovel makes the second cut and can then be easily handled.

Engineering and Mining Journal.

An Easy Method of Determining a Grade.

We give below a simple method of determining grade, without the need of a gradometer or any other apparatus. All that is required is to measure off ten feet on any convenient stick and rest one end as shown in the sketch above, upon the surface of the ground being careful to keep the stick horizontal.

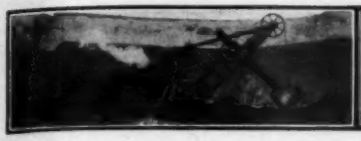


This can be done by using a spirit level or an ordinary bottle filled with water, allowing the bubble to find the center in the well known manner. Measure from the end of the stick to the ground surface and multiply by 10 which will give the per cent of the grade. The average of several such measurements will give fairly accurate results.

A Method of Pulling a Refractory Shoulder Bolt from a Shipper Shaft Bearing

Mr. A. A. Sherrill of Willow, Kentucky gives us a method of pulling a refractory shoulder bolt from a shipper shaft bearing on an armored boom. His method is to fasten a chain on the bolt and loop the other end of the chain around the end of the dipper handle and when everything is made fast, pull the dipper in toward the shovel.

If any old timer has a better method we would like to hear from him.



DEVICES YOU OUGHT TO KNOW ABOUT

A New 4-ton Dumping Truck.

The Baker Motor Vehicle Co. of Cleveland have just announced a new 4-ton dumping body on their standard 4-ton chassis.

This dumping body is made of sheet steel reinforced with angle iron and is well riveted together. The floor is made of channel steel riveted together, with a smooth steel plate on top for floor. The tail gate is locked and unlocked by a lever at the side of the driver's seat. The body can be tipped to an angle of 45 degrees. The tipping is done by two arms, one on each side of the body, fastened to a large steel crank shaft which revolves in one direction only. Two-thirds of the revolution to tip and one-third to lower. This allows the body to come down

4-Ton Baker Dumping Truck.

to its position on the chassis frame in half the time required to raise it for dumping. The body may be raised and lowered to its regular position in 50 seconds.

The dumping is done by either a hand crank or an auxiliary motor mounted under the seat and driving through a shaft and worm 8 spur gear reduction on the crankshaft. This shaft runs in oil contained in a dust-proof housing.

The sizes of the standard bodies for handling ordinary material are as follows:—

	Length.....	11 feet.....	14 feet
Coke	Width.....	4 feet.....	6 feet
	Height.....	3 feet.....	3 feet
	Length.....	10 feet.....	14 feet
Coal	Width.....	4 feet.....	4 feet 6 inches
	Height.....	18 inches....	2 feet
	Length.....	10 feet.....	14 feet
Sand	Width.....	4 feet.....	4 feet
	Height.....	1 feet.....	1 foot 3 inches plus 3″ flare.

A Portable Power Driven Trench Pump.

A portable power driven trench pumping outfit is a necessity one time or another on almost any construction job. Many an hour of delay might have been saved a contractor in the past if he could have depended upon an outfit of this kind to keep his pit or trench dry. The saving in the cost of operation as compared to the usual man-power pump has more than once been proved remarkable.

An outfit of this description is now being offered by the C. H. & E. Manufacturing Co., Milwaukee. It consists of a strong 3 H. P. 4 cycle, water hopper cooled gasoline engine, connected with either a 3″ of 4″ side suction diaphragm pump. The outfit is mounted complete on a channel iron truck, as shown in the accompanying cut.

The capacity of the pump is 3000 gallons per hour with the 3″ suction pump and 6000 gallons per hour with the 4″ pump. It is said that it can do the work of from four to six men.

The shipping weight of the former outfit is 850 pounds and of the latter, 890 pounds.

The C. M. & St. P. Ry. Co. have recently placed 18 outfits on their different jobs, while the Florida East Coast, The Pennsylvania, The Northwestern, The C. B. & Q. and other roads are using them very generally. There is no exaggeration in the statement as many a contractor can testify, that such an outfit can pump "40 gallons while Pat stops to light his pipe."

C. H. & E. Portable Power Driven Trench Pump.

Generating Sets for Shovels and Draglines

Night work is frequently a necessity with nearly every contractor or user of excavating machinery in this day of progress. The proper lighting equipment has always been a problem and an important one. To solve this problem Engberg's Electric & Mechanical Works of St. Joseph, Mich., old established manufacturers of generators and vertical type engines, have made use of their fifteen years of experience to design a small electric light plant specially adapted to shovel and dragline work.

The design, as the accompanying views will demonstrate, has been made with a view to making an outfit free from complication, accessible and easy of adjustment. These three points are most important for this class of work. Removable side

Three and One-half Kilowatt Engberg Generator Set.

doors are provided on each side of the engine frame allowing access to the crosshead, wrist pin, and all adjacent parts, while the hand hole plates on the opposite sides of the engine frame give access to the lower end of the connecting rod.

The lubricating system is designed so as to be most positive and economical.

On all sizes larger than 2½ kilowatt, it is made up with an oil pump situated in the base of the engine, pumping the oil from an oil reservoir up into a sight feed oil cup which leads to a distributing oil trough on the inside of the engine frame, from here oil pipes lead to all movable bearings, which are grooved to insure proper distribution of oil. Then the oil is redrained back into the base, refiltered and repumped. There has also been provided in the engine frame a water shed partition preventing the oil from coming in contact with the hot cylinder and carbonizing consequently leaving good clean oil in the oil reservoir at all times. The 2½ kilowatt generating set receives perfect lubrication from a conveniently

Two and One-half Kilowatt Engberg Generator Set.

located sight feed multiple oiler. The oil is drained from the bearings into the engine base where it can be redrained, refiltered and reused. The oil shields around the main bearings, and perfectly fitting side doors, reduces the loss of oil to a minimum.

Another very desirable feature is the removable babbitted bushings around the main bearings, which can be renewed without removing the crank shaft.

Engberg generators are made in sizes ranging from 2½ kilowatt to 50 kilowatt. The types most used on excavating machinery is the 2½ kilowatt and the 3½ kilowatt.

These people inform us they have just received new descriptive bulletins and testimonial booklets from the printer, which they would gladly send to any interested parties.

A Slight Misunderstanding

A man who lisped had bought some pigs, and he asked a neighbor for the use of a pen for a few days.

"I have jutht been purchathing thome thwine—two thowth and pigth. I want to put then in your pen till I can fikth a plaith for them".

"Two thousand pigs"! exclaimed the astonished neighbor. "Why, my pen will hardly hold a dozen.

"You don't understand me, Mr. Bent. I don't thay two thousand pigth, but two thowth and pigth"!

"I hear you", said Mr. Bent. "Two thousand pigs! Why, you must be crazy"!—*Country Gentleman.*

The managing editor was looking over a poem just submitted. It read:

When dusk is changing into dark
I'll meet her in the leafy park—

"Don't think the meter is proper," he said; "throw it out,"
—*Ex.*

SHOTS FROM THE FIRING LINE

Alabama

Birmingham Items

By R. S. Byron

The contractors along the Mississippi have experienced some of the finest weather known to history. They all boast of big estimates and they all look prosperous.

The Dameron & White Co. of Baton Rouge now have their two machines out of the Red river and have moved them onto their work at Delta, La. below Vicksburg. They are also moving one of their other machines onto this work. Mr. Dameron advises that all of his work is moving along nicely, except at Placimine, La., where the levees are seeping.

Hearin & Ryan are certainly making the dirt fly with their new class 24 Bucyrus dragline on their levee work about 20 miles south of Baton Rouge. Mr. Hearin advises that he expects to receive the largest estimate that was ever received on the river with one machine.

There is to be awarded by the Garland levee district, Miller county, in Texarkana on February 5th, 1914, contract for constructing about 25 miles of levees on the west bank of Red river. The work consists of over 1,000,000 yards. Maps, profiles and specifications may be seen at the office of J. D. Williams, Texarkana, Ark., or at the offices of the Morgan Engineering Co. of Memphis who have the work in charge. The Morgan Engineering Co. advise that this work can be done with dragline machines.

The Louisiana Contracting Co. of Baton Rouge are getting along very nicely with their levee work on the Mississippi river. They are now using their class 14 Bucyrus dragline at Stella, La., 30 miles below N. O. building a new levee. This work was formerly started by Michael Cullen. One of their class 24 Bucyrus draglines is now at Southwood, La. building a new levee. They report this machine doing nicely and will finish in 60 days. The other class 24 machine is at work near Fairfield, La., on enlargement work, which consists of 125,000 yards. This work was formerly awarded to Hamilton & Howell of St. Francisville, La.

Clark & Harris of Natchez, Miss. report that their work on the Remy levee at Remy, La. is moving along very nicely. They started this work about December 1st, and are doing it with teams and scrapers. This work was formerly awarded to Chas. Frye. The building of this new levee has necessitated the shifting of the Y. & M. V. R. R. tracks for a distance of five miles.

Morrow-Kennedy Co. have finished their southern work near Atlanta, Ga. This work was in charge of Mr. Harry O'Donald and the fact accounts for the speedy completion of the work.

Yeatman & Franks are operating their Browning shovel, stripping coal at Carbon Hill, Ala., this vein of coal runs about 30 inch face.

Mr. Gardner of the Western Stone Company of Chicago, was a caller last week. Mr. Gardner is making a tour of the south mixing business with pleasure.

Mr. Geo. Stanbery has just finished installing a class 18-B Bucyrus revolving shovel at Tellico Plains, Tenn. for J. D. Cranford. George says 18-B's are better than ever.

The McCartin Paving & Construction Co. have about completed their work in this city having moved about 60,000 yards of very hard material with their Bucyrus class 14-B.

Mr. J. H. Johnson of the Crow Contracting Co. of Mt. Pleasant, Tenn. has moved his family to Mt. Pleasant, Tenn., where his company has a large contract.

Mr. Graly of the B. O. S. S. & D. E. & C. was recently a caller and reports the local lodge in good working order.

Capt. Henderson of the Reynolds & Henderson Co. was a caller recently, and stated that they had finished their L. & N. work and was open for some more steam shovel work.

Mr. G. R. Dempster of Knoxville, Tenn. was a caller in this office last week, and reports that everything over by the way of Knoxville is moving along to their entire satisfaction. Mr. Dempster has just finished running a shovel for C. J. McKinney of Knoxville, and is open for a position and can be reached at Route No. 6, Knoxville, Tenn.

Major Crow of this city was a caller in this office last week to bid us farewell, as he is leaving for Tampa, Fla., as he will make his home there with his son Tom.

Decatur—The Nashville, Chattanooga & St. Louis R. R. Co. contemplates, it is said, the extension of the Decatur, Chattanooga & New Orleans R. R. from Lax to this city, 20 miles. H. H. Trabus, Nashville, Tenn., assistant chief engineer.

Arkansas

Newport—The contract for about a million cubic yards of ditch work in the Overcup Slough drainage district, for which bids were received at Newport, Arkansas on January 6th, has been awarded to the Moffatt Company of Des Moines, Iowa, at 7.85 cents per yard. The Morgan Engineering Company of Memphis are the engineers.

Paragould—Bids will be received until February 10th, by St. Francis drainage district, of Green and Clay counties, C. B. Bailey, engineer, for levee enlargement and for extending Big Slough ditch, three miles, at a cost of $115,000.

Osceola—The St. Francis Valley Engineering Co., of this city, completed surveys for ditches and levees for drainage district No. 12, Craighead county, including 17.3 miles of ditches containing 366,500 cubic yards and 1.8 miles of levee containing 40,800 cubic yards embankment; also six steel bridges. Bids will be asked during February.

California

Spicy Bits from Los Angeles

By G. H. Hutchinson

L. Schlagel went to Kingman, Arizona to work for Charles Miller.

Chris. Kaehler, secretary of the A. U., still thinks it is Christmas. As Chris. furnished us with a Christmas remembrance we will leave to the imagination of our readers as to what happened.

Joe Rowan punctured an inner tube trying to blow two tin horns on New Years night, and was instructed by the traffic officers to reduce the noise or go to work. We saw him shortly afterward on a Marion-Osgood merry-go-round, and he told us confidentially that that was the first real work he was ever guilty of doing.

Tom Littlefield reports he has a new girl. Tom is trying to hold down two jobs, one with the Highway Commission on a 60-C and the other with the new girl, and is about the busiest man in this neck of the woods.

Ben Hoydt is trying to declare himself in as an equal partner with the cashier in one of the cafeterias. Ben says this is some job.

Joe Labell is working a double shift at the U. S. trying to teach C. H. Hallenberger how to play poker pool. We have heard he has turned over a number of new leaves since the first of the year.

It is reported that Billy Gallagher is hunting rabbits at Mulholland, (it is a safe bet they are not Jacks), we have not heard whether the rabbits are pedigreed. We heard of him, however, being at Venice during the holidays and presume Bill is wise enough to know where they are thickest.

Hank Riebel was in town for the holidays. He told them all how much material he has dug with Grant Brothers' 70, set 'em up a few times, and got out of town without being pinched.

Lee Moor, one of the largest contractors in El Paso, Texas, is in the city for a few days. He is looking for a job ranging all the way from $100,000 to $1,000,000. His equipment consists of steam shovels, locomotives and cars which is at present located at El Paso and ready to move on the next big job that he can grab off.

In addition to being a contractor, he is also in the banking business, and makes his headquarters at the Rio Grande Valley Bank & Trust Company.

Harry Dillon, contractor from Phoenix, Arizona, has completed his work on the Pacific Electric railway near San Bernardino, and is now in Los Angeles collecting the twenty-five per that has been held out. He has made arrangements for a turkey dinner on Saturday, January 17th, to which yours truly has been invited. It is needless to say we will be on the job.

We learned recently of a piece of work that friend Dillon had in Nevada some years ago. A portion of the work ran through some property that was owned by a widow by the name of McCarthy. Prior to Dillon's coming, she had chased off the property numerous right-of-way men, surveyors, etc., and it was up to Dillon to make peace with the widow. About the first thing he did was to try to borrow her buggy, instead of going himself he sent the foreman who came back without the buggy. Dillon then got busy and got it himself and the Irish lady told a friend of Dillon's that if her buggy had gold bands on it Dillon could get it. This accounts for Dillon's success.

Another story we heard of Dillon was during his sojourn in Mexico. On his arrival there Jim Cashion of Grant Brothers Construction Company tried to start Dillon off right and loaned him his Mexican dictionary. He looked this over for a week or ten days, and on leaving, the dictionary wanted to go with him. No wonder some people are successful in this world.

Mr. and Mrs. C. H. Sharp, contractor, sailed on the Korea on the 15th, for Honolulu, to be away for a period of about six weeks.

Los Angeles—D. C. Jackling, vice-president and general manager of the Utah Copper Company, accompanied by a party of friends, recently set sail from here for Panama in his new steam yacht, the Cyprus, which is considered one of the most elaborate in the world. It is not only so substantially built that it will withstand the roughest sea, but, in every detail, the furnishings are elaborate. The inside woodwork finishing is in imported woods, the Jackling coat-of-arms and the house flag of the New York Yacht Club have been hand-painted on every piece of china and glassware and all of the service is sterling silver.

The music room, perhaps the most attractive of the many elegant apartments, contains a player piano and one of the finest ever made, the latter being built from curly Java teak, especially imported for the purpose.

Thirty-four different kinds of fire-arms are aboard, to insure the company a suitable weapon for all kinds of game, and the fishing tackle and bait have been selected with a view of being prepared for anything from brook trout to the largest sea fish.

E. E. Shepard, the steward, was formerly employed in a similar capacity by J. Pierpont Morgan on the famous yacht Corsair.

Canada

Notes from Montreal

Kennedy & McDonald, of Woodstock, N. B., who have been working on the St. John Valley railroad, have closed down for the season. They expect to open early next year and finish their train filling and ballasting. They have just purchased a new 70-C Bucyrus shovel for their work. They are also undertaking about twenty-six miles of heavy grading.

Yale & Reagan, of Chicago, and Hill, Leonard Construction Co., Ltd. of St. Catharines, have each taken a sub-contract on section 2 of the Welland canal.

The Dominion Dredging Co., contractors on section 1 of the Welland canal, recently made their first tryout of their new 85-C shovel. Without being fully equipped, they turned out at the rate of 1,000 yards for the first day in heavy digging and expect to exceed this when they get properly organized.

With a 60-C Bucyrus, four years old, Kennedy & McDonald, Woodstock, N. B. averaged 28,000 yards of rock per month, using 6-yard cars and dinkeys.

Notes from Winnipeg

The Foundation Company have commenced working on the righting of the C. P. R. grain elevator, which settled to an angle of some 45 degrees at the north Transcona yards.

Winnipeg—It is probable that the Canadian Pacific Ry. will undertake few new construction projects in western Canada during the present year. Instead it will devote its energies to pushing toward completion the work brought over from 1913. This includes the double-tracking, the completion of 600 miles of branch line extensions that already have been graded, the terminal improvements in Winnipeg and Vancouver and the tunnel under the Selkirks. The expenditures approved for the present in the west are almost entirely confined to the completion of track laying, ballasting, etc., on grading already done for branch line extensions and double-tracking. There are 600 miles of branch line extensions practically ready for steel.

In the way of double-tracking, 145 miles of lines have been graded and made ready for steel. Between Winnipeg and Calgary there are 70 miles, and in the British Columbian division there are 75 miles.

North Sydney, N. S.—The Union Construction Co., Ltd., North Sydney, N. S., was awarded a contract for a branch to the Intercolonial Ry., from North Sydney station to a junction with the main line near Leitch's creek station.

Colorado

Denver and Vicinity

By H. N. Steinbarger

Phillips Construction Co. and O'Gara still have about 75 days work on the Trinchera Irrigation District job in the San Luis Valley, Colorado. It has been a very large and difficult contract but with all has been handled with much dispatch. A large dam is being constructed principally of earth though about 40,000 yards of yard rock excavation and fill was encountered. One fifteen mile canal, several small ditches, and a large steel flume with many concrete structures go to make up the project. Figuring approximately, the total contract amounted to $400,000.00. It is about seventy-five per cent complete.

H. R. Phillips has had continuous and active charge of this construction. Of course occasional pilgrimages to Denver, their headquarters, has been necessary. One has to get the sage brush out of their boots once in a while.

Wm. O'Gara of this company has been absent much of the winter, investigating many large projects. They are large

operators, have a large outfit and believe that it should be kept in service. With construction at a low ebb they are fortunate, indeed, to have kept the larger portion of the equipment busy. We wish them continued success and prosperity throughout this new year.

On January 9th, Dooling Brothers of Denver and Kansas City moved in their model 60 Marion on their new contract near Guernsey, Wyoming, on the Burlington Railroad Company's new line which runs from Guernsey, Wyoming to Wendover, Wyoming. Mike and Robert Dooling are looking after their interests at this time. By the time this goes to press they will no doubt have the dirt flying in every direction. From all reports we understand that Charlie Dooling who went to his old home in Kansas City for the Christmas holiday period is still hibernating in that section. We never knew that he was of the hibernating species before, but as he is keeping himself very much in the dark and nobody seems to know just what is the cause of it all, we know of no other reason. As a matter of fact we believe he ought to be in Denver, if for no other reason to at least get acquainted with his old friends in that section. A little later on we know he will return to Denver and then wend his way onward to the neighborhood of Guernsey, Wyoming, for we do not believe that any piece of work of theirs can get along without his scintillating presence and his large and varied vocabulary. We have heard much of his constructiveability and from our general knowledge of a contractor's large and extensive vocabulary is a very necessary thing on the job, and as a matter of fact it is considered a real art, and we believe from all reports that Charlie is the dean of them all.

The Burlington Railroad Company's new work which was recently let to Kilpatrick Brothers is gradually being covered by various sub-contracts. We believe by the middle of February the entire line will be well covered. At the time of going to press it is understood that sub-contracts have been let to the following: Dooling Brothers of Denver and Kansas City; Young & Crook of Denver; Hamilton & Gleason of Denver; Gibbons Brothers of Salt Lake; Sprague & Nisely of Beatrice, Nebr.; and L. A. Johnson of Beatrice, Nebr.

As far as we know the address of all is Guernsey, Wyoming. all of them have complete outfits, and all of their work it is expected will be well under way by the first or middle of February.

Contractor Stinson, now of San Francisco, California, but formerly of the inter-mountain section where he operated for years with Kilpatrick Brothers, is in Denver looking up old friends and incidentally taking a nice long rest. He is reported as having within the last few years made a big success of the general contracting business, operating principally on railroad work. We hope that he will like it so well around Denver that he will look around and pick up a nice piece of work.

Jim Maney of Maney Brothers & Company, Oklahoma City, and Boise stopped in Denver early in January for a couple of days just to look the old town over and renew acquaintances. He did not tarry long as he seemed to be in a big rush to get up into Idaho to look over an irrigation project which they have under way. We trust he will find everything as it should be and that he will soon have his entire outfit going.

Pat Fitzgerald spent the early part of January in Denver, his home town. Pat certainly looks well. Hobnobbing with the old timers in the Utah district seems to have done him a lot of good. He has just finished up a nice job with his New Era elevating grader outfit, consisting of two machines and the requisite number of wagons and teams and is about to move on to another contract for grading of new second track on the D. & R. G. railroad near Springville, Utah. We hope Pat lines up exactly what he wants and that the year of 1914 will be a record breaker for him.

Jimmy Davis who owns and operates the Western Railroad Labor Agency in Denver, and who also has been contracting for a couple of years has finished up his work under Twohy Brothers near Casper, Wyoming. He comes in with his same old story that he had a nice job but didn't make any money. However, we never fail to notice that he usually has a few dollars laying around that clink together merrily. As a matter of fact he took what was planned to be a short trip to Omaha for Christmas and the holidays. As this paper goes to press he is still absent. I guess that shows that he has a little coin of the realm to distribute.

General William Crook of the firm of Crook & Hoffman is circulating around some in Denver, taking a well earned rest. This does not mean that he is at all inactive by any means, for he always has his eye out for a nice piece of work. He has operated for sometime past, up in the Montana territory and has completed some very fine contracts in that section. At the present time he is somewhat interested in the subject of dragline excavators, although he is not in the market. When he learned of the three big electric draglines which the Bucyrus Company will soon ship into the Montana district for reclamation work he remarked that he certainly was going to make a special trip to see them in operation. Although the general is not from Missouri, still he likes to be shown when it comes to equipment of any kind. He is a great believer in Bucyrus equipment and naturally interested in any progress that is made in the direction of perfecting their machinery.

It looks like old times around Kilpatrick Brothers' office in the railroad building in Denver. Constant streams of contractors have been dropping in to visit and talk shop with special reference to the new Burlington work in Wyoming. General Dan Griffin (please note that we have two generals in active harness in Denver) is consequently much pleased with everything in general for their is nothing he likes better than active construction work to keep his mind busy. It must be admitted, however, that when he and some of the colonels, captains, lieutenants and even down to the privates get together, even when there is no active construction work under way, that more railroads can be built in the space of a half hour, more tunnels bored than in any other section of the country. But in any case let it be understood that the general has full command. Only the other day it is reported that corporal Steinbarger was thoroughly reprimanded for not attending to his duties properly. Of course the corporal doesn't look at it that way, but nevertheless, his chevrons and stripes have been taken away, and he has been reduced to the ranks. Only one thing will save him now and that is an appeal to the general. We might add that it is generally understood that the general always listens to the appeal of his subjects and deals out the glad hand impartially when he deems it advisable. In other words he has a soft spot in his heart for all of his friends.

G. W. Hamilton of Hamilton & Gleason, now of Springville, Utah, was in Denver for about a week during the holidays, accompanied by Mrs. Hamilton. They visited many friends and incidentally took in the annual ball at the Denver Athletic Club of which G. W. Hamilton is a member. He reports one big time and he left Denver with a kind of a feeling that it was one of the most enjoyable occasions of the year. He says that it is mighty hard to get down to real business after such a jaunt and that every time he attends a function of that sort, he decides to swear off for all time to come. It is understood that Bobbie Hamilton was in town, but that only comes to us by wireless for he certainly kept out of the bright sunlight. Nobody saw him and nobody knew any thing about it except that G. W. tells of his visit.

Mr. and Mrs. M. Dooling have taken an apartment in Denver, and report that they are very nicely situated. Robert Dooling and Charlie Campbell are also making Denver their headquarters these days. As a matter of fact it is understood that they really consider Denver their home town, although everybody knows that they were raised around Kansas City, Mo. It will be some time before they wend their way to their camp

near Guernsey, Wyoming, as weather conditions are not the best and in reality their presence is not needed at that point. However, we will be sorry when the time comes for them to make that move, but we are wishing them all the most successful year of their existence.

Georgia

Gore—The Rome & Northern R. R. Co., H. H. Shackelton, general manager, Rome, Ga., contemplates the Gore-Subligna extension, 8 miles in length.

Iowa

Dedham—L. J. Theel is craning a Bucyrus shovel here for S. M. Green.

Illinois

Chicago—A new railroad from Chicago to Cairo, passing through Sprinfield, is to be constructed by the Chicago, Springfield & Cairo R. R. Co. A large part of its right-of-way is reported to have been secured.

Kansas

Skidmore—H. C. Jones is acting as superintendent for the Flemming Coal Company at this point. He advises us that the new 175-B Bucyrus shovel was erected by John Elliott of the Bucyrus Company and that the erection time was just thirty days from the day the first piece was unloaded from the cars. He considers it an excellent record.

Manhattan—Bids will be received until noon, February 17th, by secretary board of supervisors, Straight Creek drainage district No. 1, Jackson County, Kansas, for constructing about 4½ miles southeast of Whiting, Kan., open ditches including 129,500 cubic yards excavation, and earth levee involving 6,500 cubic yards embankment. H. B. Walker, drainage engineer, State Agricultural College, Manhattan, Kan., supervising engineer.

Wichita—The Santa Fe system, it is reported, will double track its line from Newton through this city to Mulvane.

Wichita—The Kansas City, Mexico & Orient Ry. Co., will probably be reorganized and an extension built from this city to Kansas City, 204 miles.

Pittsburg and Vicinity

By W. S. Russell

Contrary to expectations a month ago owing to the mild weather, the coal market is dull for this time of the year and prices are not being maintained. We quote as follows: Lump, $2.25 per ton; Nut, $2.00 per ton; Mine run, $1.60 per ton; Mill run, $1.50 per ton; Slack, $1.35 per ton; F. O. B. cars at the mines.

There are now twenty-six coal stripping steam shovels working in the Pittsburg field and they manage to keep going practically on full time as there appears to be a preference for strip coal. The proportion of strip coal being about one-sixth of the entire output of this field, there appears to be no difficulty in disposing of their product.

There are good openings for parties having means who may wish to engage in coal stripping; which is a very profitable business in the Pittsburg district. We know of several good fields of strip coal that may be secured either by purchase or lease.

The cost of a plant, including steam shovel, tram cars, track locomotive, tipple with shaker screens, engine, pumps, water pipe, etc., will vary from $30,000.00 to $50,000.00 part of which may be purchased on several months time. Communications may be addressed to the Pittsburg Machinery Co., No. 806 N. Broadway, Pittsburg, Kansas.

The big Bucyrus coal stripping steam shovel recently purchased by the Flemming Coal Company is completed and is being moved over to their field near Skidmore, Kans., about 16 miles south of Pittsburg. This shovel is one of the largest built by the Bucyrus Company, its working weight is 190 tons, has a 75 foot boom, a 3½ yard dipper and will handle 2,500 cubic yards of earth material per day of nine hours.

The Bucyrus Company now have five shovels of this size in this field, and expect to place several more during the year. These shovels have made a record for handling hard blue shale and soft sand rock that it would seem impossible to dig without blasting.

John Elliott erecting engineer of the Bucyrus Company has had charge of installing this shovel.

The three Bucyrus steam shovels operated by Smith- Scott & White, contractors, stripping coal near Chicope for the Central Coal & Coke Co. have resumed operations after being shut down for several weeks owing to failure of the coal company to take the coal stripped.

The Ellsworth-Klaner Company, contractors, have also been delayed in operating their big model 270 Marion shovels by the same company, for the same reason, but are now working again.

R. J. Laurence, mining engineer of the Carney Coal Company of Iowa, is at the Stilwell Hotel. He has four drills at work prospecting a field of strip coal land near Minden, Mo.

E. P. White of Smith, Scott & White, has returned from a business trip to New Orleans.

Mr. Forrest Fordham, traveling salesman for the Bucyrus Company, accompanied by Ed. Renwick, manager of the Chicago Gravel Co. made a flying trip to Pittsburg about the 18th of December. Mr. Renwick came to inspect the coal stripping steam shovels with a view to purchase a Bucyrus shovel for digging sand and gravel in a bank having from 50 feet to 60 feet face. He was so much pleased with the operation of these shovels that he placed an order for a 175-B Bucyrus soon after his return to Chicago.

Mr. Chas. Haffke of Omaha, Neb. was a recent visitor at Pittsburg. He came to look over the coal stripping in this field. Mr. Haffke is interested in a coal mine in Wyoming. He says the coal is 27 feet thick, with from 15 feet to 50 feet of overburden over it; that it is the greatest stripping proposition in the country, but unfortunately there is only a limited demand for the coal and not much prospect of opening it up at present.

Stuart Crowe of the J. R. Crowe Coal & Mining Co., came down from Kansas City this week. They are operating two Marion steam shovels, stripping coal near Weir city and Scammon, Kansas.

J. J. Stephenson of the Stephenson Coal Company is at Excelsior Springs for his health and is being greatly benefited by the water of that resort.

E. J. Scott of Smith, Scott & White arrived from St. Louis this week, and is at the Stilwell Hotel.

The Bucyrus Company are now building a steam shovel of the revolving type, especially designed for loading coal from the pit into tram cars. It is claimed that this steam shovel will effect a considerable saving in this operation. This shovel will be ready for delivery the first part of February.

The Pittsburg Machinery Co. are now located in new quarters at No. 806 Broadway, just above the Stilwell Hotel. They have rented an entire store building and have in a large stock of coal miners and contractors supplies, tools, etc. They also handle all kinds of mining machinery, also repairs for Bucyrus shovels, and are doing a nice business.

Kentucky

Willow—A. A. Sherrill is operating a model 61 Marion shovel here for the English Stone Company.

Barbourville—It is reported that the Louisville & Nashville Railroad Co. is considering double-tracking the entire Cumberland Valley division.

Minnesota

Cuyuna—Dale & Baumgardner, 301 Scand. Am. Bank Bldg., St. Paul, Minn., were awarded contract for Kennedy Mine spur of the Cuyuna & Northern R. R., including 100,000 cubic yards of earth embankment. R. A. McMenemy, 645 Endicott Bldg., St. Paul, Minn., was awarded sub-contract.

Missouri

St. Louis Items

By A. J. Michel

W. H. Schott of Chicago, secured the contract for the grading of the new interurban electric railway between Peoria and Galesburg. Work will start early in March, or sooner if weather permits.

S. M. Bair an A. No. 1 steam shovel engineer is idle at present. He can be reached at Canal Dover, Ohio.

Joe Ballinger who has charge of the several shovel outfits for the Portland Cement Co. at Ft. Bellefountaine, dropped in for a chat. He states that they are preparing to shoot and load 100,000 yards of stone.

Louis Demich the hustling manager of the Foreign Labor Dept. of Clapp, Norstrom & Riley, the Labor Agents of Chicago, passed through here on his way to Hot Springs where he will take a quiet sojourn. He is quite optimistic as to the construction and railroad work in general for 1914.

Zay Gardner, road master of the M. K. & T. spent a week here with his family. He secured a contract for himself for relaying 90 miles of steel for this company.

The Frisco Railroad awarded the contract for rip rapping the river along their tracks near Cape Girardeau, Mo., to J. W. McMurray of Kansas City. He expects to finish this work in ten months and will receive $99,900.45, this being the lowest bid.

Several good railroad and contractors' boarding outfits here. If you can use, then write Michel.

Fulton—The report that the Chicago & Alton railroad has bought the St. Louis & Hannibal railroad, known as the Short Line, is denied by officials of the road. It also has led to a statement from a well-known official that the Chicago & Alton has under consideration another line between St. Louis and Kansas City that will take in Fulton, Fayette, Columbia and intermediate cities. It is believed this move will be made to circumvent the Burlington, which plans a new line from Francis to Kansas City, and the McKinley Interurban people, who say they will build a system of electric lines through North Central Missouri.

The Chicago & Alton and Burlington railroads have been using what is known as the "Burlington cut-off," between Mexico and St. Louis, for their combination trains known as the Burlington-Alton. The cut-off joins the main line of the Burlington at Old Monroe. The two roads used the roundhouse and shops at Francis, near Mexico. The Burlington will begin work this spring it is said, on an extension from the western terminus of the cut-off at Francis to Kansas City. This information was conveyed this week from a reliable source. The road is to run west on a straight line to Carrollton. The road will pass five miles south of Moberly. From Carrollton to Birmingham the Santa Fe tracks will be used. At Birmingham the trains will go over the Burlington tracks into Kansas City. It will be designed for through traffic and will be a fast line. The Burlington made a survey of this route in 1906.

Through this arrangement the Chicago & Alton would still have its through line from Kansas City to Chicago via Mexico, and the new extension from Steinmetz through Columbia and Fulton would give it a short and direct route between St. Louis and Kansas City.

New Mexico

Santa Fe—The French Construction Co. has been incorporated to complete the construction of the Albuquerque Eastern R. R. into Albuquerque and its extension to Farmington.

New York

Minetto—The photograph above shows a 70 ton Bucyrus shovel owned by Walter Bradley & Co., of Fulton, N. Y. The machine is digging solid sandstone in the bed of the Oswego river near here. The photograph shows about one foot of heavy ballast which lies over the rock.

The machine is operated by Louis Augustine to whom we are indebted for this view. R. Wagner is craning the machine and Lee Clark is firing.

North Carolina

Palmerville—B. L. Boyd is operating a 70-C Bucyrus shovel for the Hardaway Contracting Co. at this point. Albert Craddock is craning the machine.

Oregon

Milton—Engineers of the Oregon-Washington Railroad & Navigation Co. will shortly have surveys completed for an extension from this city to Vincent, Ore., and Attalia, Wash.

Pennsylvania

Canonsburg—W. J. Walsh is at the present time walking-boss of Brocklehurst & Potter Company on their contract near here. They are operating a 70 ton Bucyrus shovel.

Wilkes-Barre—Edward George is operating a Bucyrus 14-B electric revolving shovel for the Wilkes-Barre Railway Co. The machine is digging shale rock as shown in the view on the next page, and according to all reports has been doing splendid work.

Clarks Summit—John E. Peffley is craning a 70-C Bucyrus shovel here for Robt. Grace Company.

The Wilkes-Barre Ry. Co's. Bucyrus Electric Shovel.

Tennessee

Memphis—Sealed bids will be received at the office of the board of directors of the Garland levee district, Miller County, Arkansas, in Texarkana, until noon Thursday, February 5, 1914, for the construction of approximately 25 miles of levee on the west bank of Red river. The work will be offered to bidders in three parts as follows:

Stations 0 to 450, approximately 400,000 cubic yards.
Stations 451 to 900, approximately 375,000 cubic yards.
Stations 901 to 1317, approximately 310,000 cubic yards.

A certified check for $5,000 must accompany each bid. The board of directors reserve the right to reject any and all bids.

Maps, profiles and specifications may be seen at the office of the Morgan Engineering Company, Memphis, Tennessee, by whom the work was planned, or at the office of J. D. Williams, secretary of the board, Texarkana, Arkansas, or will be furnished by the Morgan Engineering Company for the following prices: Set of Maps, 75c; Profile, 75c; Typewritten copy of specifications, 50c.

To visit the district, contractors should go to Garland on the Cotton Belt railroad,as the proposed levee begins a short distance south of that point. The lower end of the levee is within about two miles of Fort Lynn on the Kansas City Southern railroad.

The work is suitable for construction either with dragline machines or teams and scrapers.

Maryville—R. B. Oliver, Maryville, Tenn., has been awarded the contract for the Maryville-Knoxville Interurban Ry., as mentioned in a recent issue. The work includes 300,000 cubic yards earth excavation, 100,000 cubic yards of rock excavation, 1,800 cubic yards concrete and one 800 foot bridge.

Memphis—Bids will be asked in about two months for the construction of two drainage systems in Crittenden County, Arkansas, that will require about 7,000,000 cubic yards of excavation. The work is to be done for drainage districts Nos. 2 and 3 of the above county. The districts are adjoining and are located just west of Memphis, Tenn. The proposed work has passed all court proceedings and the commissioners have been appointed. Final plans are being prepared and assessments are being made on the lands of the districts preparatory to floating bonds for the work. The districts are composed of the typical alluvial Mississippi valley lands. About 50 per cent of the districts are in cultivation. They are traversed by numerous dirt roads which are maintained in fairly good condition throughout the year.

Texas

Sheridan—J. W. Bailey is operating a class 45 Atlantic type shovel for the San Antonio and Aransas Pass railroad here.

San Benito—Hidalgo Construction Co., San Benito, awarded 21 mile extension of San Benito & Rio Grande Valley R. R., from Fernando to San Benito. E. E. McLellan, San Benito, chief engineer railway.

Dallas—Surveys have been made and a portion of the right of way secured for the Dallas Southwestern Traction Co's proposed line from this city to Glen Rose, 91 miles. Actual construction will be commenced about March 1. E. P. Turner, president, and J. T. Witt, chief engineer.

Sweetwater—The Gulf & Pacific Ry. Co. of this city has been incorporated with a capital stock of $125,000 to construct a line from this city to Comanche, 125 miles. Thomas Trammell of this city, director.

Utah

Salt Lake City and Vicinity

By H. N. Steinbarger

Hamilton & Gleason completed about the 5th of January their new second track work on the D. & R. G. Ry. at Thistle, Utah. They made a fine record on this considering the fact that about one train every hour of the day or night passes through Thistle and consequently along side of the new track. Much wet material was encountered due to the many springs in that locality. Two 70-C Bucyrus shovels and five locomotives and trains were employed.

Hamilton states that he has just taken a new contract for the same class of work on the D. & R. G. Ry. near Springville, Utah. About 12,500 yards of excavation principally clay, with some loose rock will be encountered. One 70-C Bucyrus shovel will be used.

Their other 70-C Bucyrus shovel will shortly be moved to Guernsey, Wyoming. They will open up some thorough cuts and dig approaches to a 1200 foot tunnel on the new line of the Burlington.

Virginia

Lahore—L. S. Coleman is craning a Bucyrus shovel for the Luck Construction Company at Lahore, Orange County.

Cambria—H. A. Riviere is operating a 70-C Bucyrus shovel here for C. W. Lane & Co. Inc.

Washington

Spokane—The Twohy Bros. Co., whose offices are at Portland, Ore., have recently started a very interesting piece of construction work.

This consists of a trestle fill, involving 1,500,000 yards of material. The equipment used on this job will be one 100-C Bucyrus and four trains of K. & J. dump cars.

The contractors report that while they are not yet well started on the job they have reached an output of 4,000 yards of material per shift of 10 hours, and expect to increase this to 5,000 yards in the course of a short time.

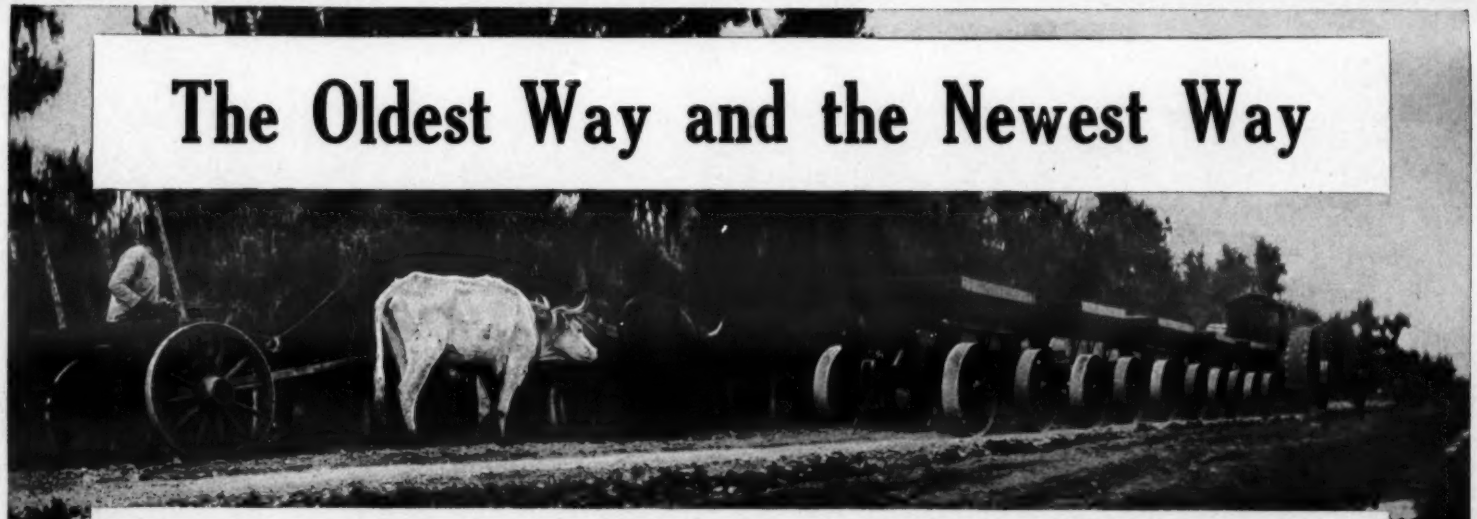
Wisconsin

Madison—Governor McGovern has appointed a commission to investigate the feasibility of digging a canal between the Mississippi river and Lake Superior. J. A. Chinnock, Hudson, is a member.

Foreign

Tenders have been asked by the Ministerio de Fomento, Madrid, Spain, for the construction and working, for a period of 99 years, of a railway from Avila to Salamanca, via Peraranda Bracamonte. Tenders will be received until March 10, 1914, by the Director General de Onras Publicas, Ministerio de Fomento, Madrid, and are to be accompanied by a deposit of about $18,000. The concession carries with it a State subsidy of one-fourth of the cost of construction, which is estimated at about $1,725,000. The contract will doubtless go to a Spanish subject, but the carrying out of the work may involve the purchase of some materials and rolling stock outside of Spain.

The Oldest Way and the Newest Way



This little scene from a Texas road job shows an unusual coming together of the oldest way of hauling and the very newest way—the ox team and Troy Reversible Wagons with a traction engine.

The horse replaced the ox in hauling work because the horse was more efficient. The horse did more work and better work for less money.

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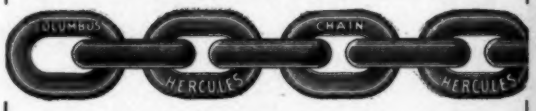

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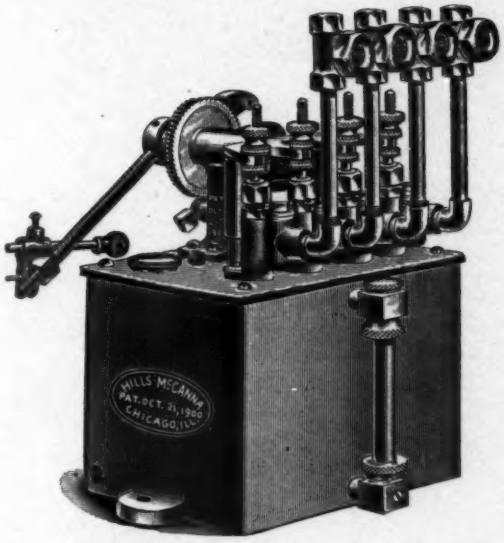

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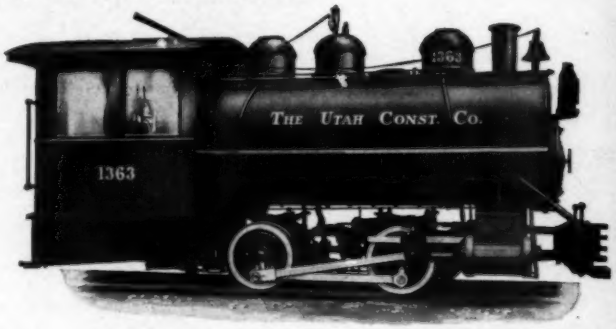

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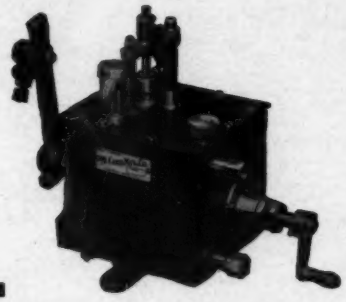

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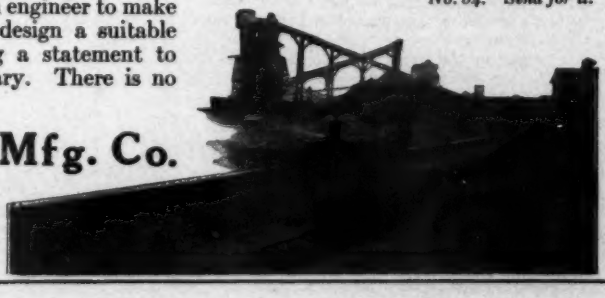

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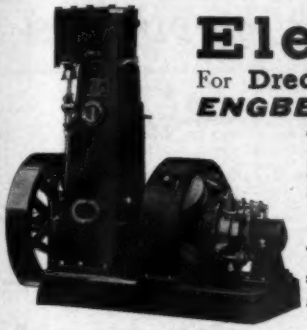

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ALPHABETICAL LIST OF ADVERTISERS

	Page
American Locomotive Co.	191
Baldwin Locomotive Works, The	198
Bucyrus Co.	199, 200, Inside Front Cover and Inside Back Cover
Bureau of Engraving, Inc.	196
Columbus Chain Co.	192
Davenport Locomotive Works	194
General Equipment Co.	199
Dupont Powder Co.	196
Engberg's Electric and Mechanical Works	199
Heath & Milligan Mfg. Co.	190
Hill, C. W.	196
Hills-McCanna Co.	193
Jordan Company, The O. F.	188
Macomber & Whyte Rope Co.	194
McCord Manufacturing Co.	195
Meisenheimer Printing Co.	197
Michel, A. J.	198
Neidlinger, C. R.	198
Pittsburg Machinery Co.	200
Roebling's Sons Co., John A.	193
Rubberhide Co.	196
Siems-Carey Co.	200
Stephens-Adamson Mfg. Co.	197
Taylor Chain Co., S. G.	195
Troy Wagon Works Co.	187
Vulcan Iron Works	189
Western Wheeled Scraper Co.	Outside Back Cover

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